

probable or less probably than it would be without the evidence.” Fed. R. Evid. 401; *Owner-Operator Indep. Drivers Ass’n v. USIS Commer. Serv.*, 537 F.3d 1184, 1193 (10th Cir. 2008). Evidence that is relevant is generally admissible. Fed. R. Evid. 402. It is within the sound discretion of the trial court to determine whether evidence is relevant. *Gomez v. Martin Marietta Corp.*, 50 F.3d 1511, 1518 (10th Cir. 1995).

The State intends on using results from sampling of certain indicator bacteria, enterococci, E.coli and fecal coliforms as substantive proof that the release of bacteria from the land application of poultry litter has created a risk a human health risk in the Illinois River Watershed (IRW).¹ The State will base that contention on State regulatory standards based on the EPA’s current Ambient Water Quality Standards (AWQS) for recreational use. However, the EPA has initiated a review of the reliability of those water quality standards and anticipates releasing revised Ambient Water Quality Standards based upon this re-evaluation by 2012. [Ex. 2, Expert Report of Dr. Herman J. Gibb, Ph.D., M.P.H., ¶ 27]; *see also* Report of the Experts Scientific Workshop on Critical Research Needs for the Development of New or Revised Recreational Water Quality Criteria, EPA 823-R-07-006, June 15, 2007, attached hereto as Ex. 3 (stating that the purpose of the workshop was to obtain input on the “critical path” research and related science needs for developing scientifically defensible new or revised recreational AWQC. pg. ES-1; Recreational Water Quality Criteria, www.epa.gov/waterscience/criteria/recreation, attached hereto as Ex. 4 (suggesting that the current standards are not scientifically defensible). The State claims that the introduction of any evidence that the EPA is evaluating, reconsidering or changing its

¹ The State in this litigation actually tested for some pathogens in the IRW waters, but found only low levels of salmonella and essentially no campylobacter. (Ex. 1, Expert Report of Samuel Myoda, pg. 14-16.)

guidelines for use of indicator bacteria in assessing human health risks is irrelevant and purely speculative.

The State argues that the Oklahoma's Water Quality Standards are the law. However, Defendants are not being sued or prosecuted for violating Oklahoma's water quality standards, but rather have been sued, in part, for creating a substantial endangerment to human health in the IRW. That claim is founded in large part not on the fact of Oklahoma's standards, but rather on their scientific reliability. The fact that EPA has initiated a review of the very guidelines that underlie and support Oklahoma's standards is highly relevant and competent evidence that those standards are not necessarily indicative of a risk to human health.

As noted, the Oklahoma standards were adopted from the guidelines promulgated by the EPA. The EPA is now re-evaluating those guidelines for a number of reasons, among them the development of a body of work suggesting that the guidelines bear little correlation to risk to human health in recreational waters that have been impacted by animal wastes rather than by human wastes. (Ex. 1, Myoda Rpt. at 14-16; Ex. 5, Report of Herbert L. Dupont, M.D. at 5-8). In this case, the State is seeking to have the Court impose liability upon the Defendants for the land application of poultry litter by its growers. The State is more specifically seeking a finding that the land application of poultry litter has released pathogens into the waters of the IRW which have created a substantial risk to human health in the IRW under the existing AWQS. Thus, the reliability of those standards under the current state of science is relevant.

Dr. Christopher Teaf, an expert for the State, claims that microbial indicator organisms are commonly used and widely accepted measures of the potential for the

presence of pathogens, including bacteria, viruses, and protozoa in recreational water and cites the National Research Council (NRC 2004), EPA (2005), and Wade et al. (2006) as references (Ex. 2, Gibb Report, ¶14 citing Teaf's Report at ¶¶ 17 and 21). However, the National Research Council in 2004 stated that

the use of indicators is based on the presumption that they co-occur at a constant ratio with illness-causing pathogens. This premise is flawed because indicator levels in the gastrointestinal tract may vary within a narrow range, but pathogen concentration is highly variable and dependent on which pathogens are in the population at what levels at specific times. Furthermore, upon leaving the intestinal tract, microbial indicators and pathogens degrade at different rates that are mediated by factors such as their resistance to aerobic conditions, ultraviolet radiation, temperature changes, and salinity. As a result, the epidemiological relationship between indicator density and illness patterns can differ depending on the age of the source material, as well as local meteorological and other environmental conditions. Several studies also have found that some indicator bacteria can grow outside the human or animal intestinal system, further confounding the correlation between pathogens and indicators.

(Ex.1, Gibb Report at ¶ 15 citing NRC (2004)). The National Research Council further stated that the underlying epidemiologic studies used to establish the AWQS involved reported failures in marine waters due non-point sources, while the epidemiologic studies used to establish the AWQS were based upon exposures primarily related to exposure to human fecal dominated point sources. (Ex. 2, Gibb Report at ¶ 16 citing NRC (2004)). Dr. Gibb opined that non-point sources generally have a higher percentage of animal fecal contributions. (Ex. 2, Gibb Report at ¶ 16).

According to the National Research Council, animals can shed bacterial indicators without some of the accompanying human pathogens. It is recognized that considerable uncertainty exists when extrapolating the present AWQS to non-point source situations. A poor correlation between bacterial indicators and virus concentrations has been found

in the study of non-point sources and water quality. (Ex.1, Gibb Affidavit at ¶ 16 citing NRC (2004)).

In 2005, the EPA found that "[t]he works of several researchers has shown that these indicators (E.coli and enterococci) are not reliable surrogates for many pathogens including bacteria, and most viruses and parasites." It further found that "[n]ew approaches for detecting pathogens are needed to improve monitoring systems." (Ex. 2, Gibb Report at ¶ 17 citing EPA 2005). In response to this research, the EPA in 2007 convened a panel of experts to evaluate the research needs for the development of a new or revised recreational water quality criterion by 2012. (Ex. 2, Gibb Report at ¶ 21). That panel did not endorse the current AWQC for bacteria. In fact, they recommended research be conducted on a variety of approaches which were not limited to the use of indicator bacteria. (Ex. 2, Gibb Report at ¶ 25).

The State argues that allowing the Defendants to refer to or present evidence of any future AWQS would allow the admission of purely speculative evidence. The EPA has expended billions of dollars to improve the science of the 1986 AWQS. (Ex. 2, Gibb Report at ¶ 26). Certainly, the EPA would not expend millions of dollars of research questioning and evaluating the reliability of its own guidelines for determining risk to human health from bacteria if it did not consider it important to revise those standards. The release of new standards for evaluating human health risk from bacteria in waters affected by primarily animal feces is not speculative. The EPA has stated it intends on releasing a new standard in 2012.

Indeed, the scientific reasoning behind the EPA's investigation has been discussed in by many experts in the field. In fact, in its Order granting Defendants'

Daubert motion to exclude the testimony of the State's expert, Dr. Valerie Harwood, the Court found that the peer reviewers who had reviewed Dr. Harwood's work had criticized her specifically for relying excessively on the EPA's indicator bacteria standards to assess a health risk in waters impacted by animal feces. As the Court found,

“[t]he relationship of fecal indicators with human health risk was developed at sites contaminated primarily with human waste. This relationship is not expected to be the same for water contaminated with feces from nonhuman sources.”

(Ex. 6, July 28, 2009 Hearing Transcript, Pg. 251:8-15 (quoting a peer reviewer of Valerie Harwood's article submission)). Thus, contrary to the State's assertion the anticipated revisions and the reliability of the existing AWQS, more specifically the use of indicator bacteria for assessing human health risks in waters affected by animal feces, are not speculative and are highly relevant to the State's claims for injunctive and other relief in this matter.

II. CONCLUSION

For the foregoing reasons, the State's Motion should be denied.

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